THE PATHOLOGY OF ORNAMENTAL PLANTS

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The rapid development of plant pathology in America has resulted in giving a far better understanding of the diseases of certain groups of plants than of others. While we find a rather extensive literature on diseases of field crops, fruits, and vegetables, we find a very meager literature on the diseases of ornamental plants.

In that period which preceded the rise of plant pathology the mycologists devoted their attention primarily to the study of the taxonomy, morphology, and life history of the parasite, and it must be admitted that the work of these men was superior in many ways to much of that which has come from the more recent students in the new school of plant pathology.

The treatment of plant diseases was the first real step in plant pathology following the work in taxonomic mycology, but with the advance of the subject it soon became evident that the plant pathologist should give a great deal of attention to the symptoms and progress of the diseases. This involves a knowledge of the physiology of both the host and the parasite, and also a knowledge of the chemistry of the plant and of the fungicides to be used.

The efforts of the plant pathologists were very naturally directed to those crops which produced food and clothing, and more especially to those crops which required a maximum amount of personal attention on the part of the grower. Consequently, we find a rapid advancement of the science in the studies of the diseases of fruits and vegetables, closely followed by studies on field crops, forest trees, and shade trees.

The apparent neglect of the diseases of ornamental plants is due to three causes: (1) most people do not look upon ornamental plants as being of economic importance; (2) many of the growers of ornamental plants have received little or no satisfaction from the plant pathologist and have therefore developed many methods which they frequently hesitate to make public; (3) the plant

pathologist frequently finds the work with ornamental plants unsatisfactory and complicated by physiological problems and difficulties which make the returns uncertain.

1. The growing of ornamental plants is of very great importance and involves millions of dollars annually. The most casual observer must be impressed by the large number of greenhouses in the vicinity of large cities, the great quantities of cut flowers displayed in city markets, and the fine plantings in public gardens and parks. To these must be added the private conservatories and gardens.

2. It is very evident that plant pathologists are not well informed concerning the diseases of ornamental plants and therefore cannot give as ready answers to the inquiries from the growers as they can to the growers of other kinds of plants, and for reasons stated in topic 3 find the study of diseases of ornamentals unsatisfactory. Furthermore, pathologists usually have all they can attend to in studying the diseases of fruits, vegetables, and field crops. The growers of ornamentals have many empirical rules for their work, some of which are very carefully guarded. However, when we find them mistaking fungus spots on leaves and stems for scale insects and treating their plants with insecticides when they should be treated with fungicides, we begin to realize that studies and publications along this line are very necessary.

3. This work falls into two divisions, outdoor and indoor plants. In the first of these we know very little beyond the treatments for chrysanthemum rusts and mildews, and a very few other diseases. The root diseases, which are carried back and forth between the greenhouses and the outdoor plots and which are frequently intensified by the fertilizers, present some of the most profitable lines of research. These problems very naturally blend to some extent into the seed bed and truck crop problems.

The indoor problems are by far the most complicated and the most difficult. Some of them are influenced by the character of the fertilizers, and by very slight variations in temperature, humidity, sunlight, and air currents. They are in many respects problems in physiology rather than pathology. It also occurs that two related varieties may require slightly different environmental conditions to protect them from the same parasite. However, many of the

problems of the greenhouses are comparatively simple, but require the service of trained men to bring about their solution. The difficulties in this work are also increased by the fact that many of the greenhouses are large instead of being properly partitioned into smaller apartments, and that numerous varieties of plants are kept in single large apartments. It will be readily seen that many of these problems merge into the problems involved in the growing of winter vegetables under glass.

There is a prevailing belief in many places that plant pathology must be confined to the agricultural colleges and experiment stations. But here is a line of investigation which can be carried on to advantage by other institutions, many of which are much better prepared to do the work than are the agricultural colleges and experiment stations. Many of our large universities are located in or near large cities and can get in close contact with ornamental plant industry; they can choose their own lines of work instead of such lines as may be dictated to them by the constituency of the agricultural colleges and experiment stations; they are frequently provided with far better mycological collections than are found in the above-named institutions; they have good corps of workers in taxonomy, morphology, and physiology, and are well prepared to investigate the various phases of the problems involved. If these institutions feel the necessity of giving a comprehensive course in plant pathology, they will find an abundance of material in the orchards and truck farms of the vicinity and in the local fruit and vegetable markets for every phase of work except the treatment of diseases. There is still another phase of the work which must prove very interesting and profitable to the departments of botany in our large universities, and that is the study of the fungi which are brought in on tropical plants and which persist unknown to many of our northern botanists.

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